Investigation of Foliar Spraying with Potassium and Iron on Growth and Nutrient Uptake in Cowpea (*Vigna unguiculata* L.)

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Abstract. A field experiment was conducted at the Experimental Farm of College of Agriculture, Basrah University, Iraq, to investigate the effect of foliar application of three concentrations of potassium (0,1500,3000 mg K L^{-1}), Symbolize it with symbols K0,K1, and K2,and three concentrations of Iron (0,200, 400 mg Fe.L^{-1}),F0, F1 andF2 on growth and nutrient uptake of cowpea. The experiment was laid out according to the factorial experiments with a Randomized Complete Block Design (R.C.B.D) with three replicates. Results indicated that foliar potassium and iron spray greatly improved plant growth and nutrient uptake, The second level of potassium fertilizer (3000 mg L^{-1} was superior to the highest averages for the studied traits, plant height, branches number, leaves number, leaf area, wet and dry weight of plant, % protein and potassium and Iron uptake, and it gave averages of 177.00 cm, 8.44 branch $plant^{-1}$ 46.54 leaf $plant^{-1}$, 2125.10 cm^2,172.05g, 54.92 g, 22.34% and 21.40, 6.84 mg kg^{-1} respectively. The second level of Iron fertilizer (400 mg L^{-1} was superior to the highest averages for the studied traits, plant height, branches number, leaves number, leaf area, wet and dry weight of plant, % protein and potassium and Iron uptake, and it gave averages of 190.80 cm, 10.77 branch $plant^{-1}$, 56.89 leaf $plant^{-1}$,2348.57 cm^2, 198.41 g, 73.27 g, 23.44% and 24.77, 6.44 mg kg^{-1} respectively. The interaction between the elements achieved a significant effect, as the combined higher levels of both nutrients achieved the best performance across all measured characteristics.

Keywords. Foliar fertilization, Potassium and application, Nutrient efficiency, (Vigna unguiculata L.).

1. Introduction